

***BROWSING A WEALTH OF MILLIMETER-WAVELENGTH
DOPPLER SPECTRA DATA***

K. Johnson, E. Luke, and M. Jensen, Brookhaven National Laboratory
P. Kollias and J. Remillard, McGill University
K. Widener, Pacific Northwest National Laboratory

For presentation at
the First Science Team Meeting of
the Atmospheric System Research (ASR) Program,
Bethesda, MD
March 15-19, 2010

**Environmental Sciences Department/Atmospheric Sciences Division
Brookhaven National Laboratory**
P.O. Box, Upton, NY
www.bnl.gov

ABSTRACT

The ARM Climate Research Facility has collected an extensive archive of vertically pointing millimeter wavelength Doppler radar spectra at both 35 and 95 GHz. These data are a rich potential source of detailed microphysical and dynamical cloud and precipitation information. The recording of spectra, which is ongoing, began at the Southern Great Plains site in September of 2003, at the North Slope of Alaska site in April 2004, and at Tropical Western Pacific sites in 2006. Spectra are also being collected during ARM Mobile Facility deployments. The data's temporal resolution is as high as two seconds, at height intervals of 45 to 90 m. However, the sheer volume of available data can be somewhat daunting to access and search for specific features of interest. Here we present a user interface for spectra browsing, which allows the user to view time-height images of radar moments, select a time or height of interest, and then "drill down" through images of spectrograms to individual Doppler spectra or time- and height-sequences of spectra. Also available are images summarizing spectral characteristics, such as number of spectral peaks, spectral shape information (skewness and kurtosis), moment uncertainty estimates, and hydrometeor vs. clutter identification as produced by the ARM MicroARSCL (Microphysical Active Remote Sensing of Clouds) value-added product. In addition to the access and visualization tools, we are developing a Doppler spectra simulator capable of generating Doppler spectra from liquid, mixed-phase, and solid cloud constituents and precipitation. The Doppler spectra simulator can be used as an interface between explicit microphysics models and Doppler spectra observations from the ARM radars. The plan is to ultimately make the spectra simulator available from within the spectra browser, allowing a user to associate observed spectra with the microphysical conditions capable of producing them.

This poster will be displayed at ASR Science Team Meeting.

NOTICE: This manuscript has been authored by employees of Brookhaven Science Associates, LLC under Contract No. DE-AC02-98CH10886 with the U.S. Department of Energy. The publisher by accepting the manuscript for publication acknowledges that the United States Government retains a non-exclusive, paid-up, irrevocable, world-wide license to publish or reproduce the published form of this manuscript, or allow others to do so, for United States Government purposes.